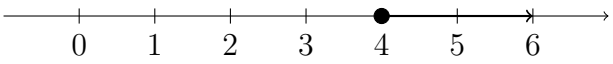
ILLAWARRA TUTORING

In this worksheet you will learn how to solve and graph inequalities on the number line so that you can visualise solutions.

Easy Questions

1. Solve the inequality $x > 3$. Then, graph the solution on the number line.
2. Solve the inequality $x < -2$. Write your answer in inequality notation.
3. Solve the inequality $2x \leq 8$.
4. Solve the inequality $3x - 1 > 5$.
5. Using the diagram provided, graph the inequality $x \geq 4$.



Intermediate Questions

6. Solve the inequality $x + 5 > 9$.
7. Solve the inequality $-x \geq 2$. Write your answer in simplest form.
8. Solve the inequality $4 - 2x < 10$.
9. Solve the inequality $5 - 3x \geq 2$.
10. Solve the inequality $2(x - 1) < 6$.
11. Solve the inequality $3(x + 2) \geq 15$.
12. Solve the inequality $\dfrac{x - 1}{2} \leq 3$. Then, use pen and paper to graph your solution on a number line.
13. Write the solution in inequality notation for all numbers x that satisfy $x > -1$ and $x \leq 4$.
14. Solve the inequality $-2x + 7 < 3$.
15. Solve the compound inequality $-2 < x + 3 \leq 7$.
16. Solve the inequality $2x - 4 \geq 0$ and describe how you would represent the solution on a number line.

17. Solve the inequality $3x + 5 \leq 2x + 9$.

18. Solve the inequality $-3(x - 2) > 6$.

19. Solve the inequality $\frac{3x}{2} < 9$.

20. Solve the inequality $2 - x > -3$.

Hard Questions

21. Solve the inequality $2(x + 3) - 4(x - 1) \geq 6$. Simplify your answer and describe your graph on a number line.

22. Solve the compound inequality $1 < 2x - 3 \leq 7$. Provide the solution in inequality notation.

23. Solve for x in the inequality $\frac{2x - 5}{3} \leq \frac{x + 1}{2}$. Show all steps.

24. A shop offers a discount such that the price after discount is given by $5x - 8$ dollars and must not exceed $2x + 10$ dollars. Solve the inequality $5x - 8 \leq 2x + 10$ for x and give a real-life interpretation of your answer.

25. Solve the inequality $-4(2x - 1) > 3(1 - x)$. Simplify your answer and explain how you would graph the solution on a number line.

26. Determine the solution set for $\frac{3 - x}{4} < \frac{5}{2}$. Write your answer in simple inequality form.

27. Solve and simplify the inequality $2(3x - 4) - 3(x - 2) \geq 4x - 5$.

28. Solve the inequality $\frac{x + 2}{x - 1} > 1$. Be sure to discuss any restrictions on x due to the denominator.

29. Solve the inequality $4 - \frac{x}{2} \leq 1$. Write your solution in simplest form.

30. Given the inequality $-3x + 4 > 2x - 6$, solve for x and explain how you would represent your solution on a number line.